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10/568,578	02/17/2006	Satoshi Hihara	028567-0145	6489

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EXAMINER	
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ART UNIT	PAPER NUMBER
1651	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,578	HIHARA ET AL.	
	Examiner	Art Unit	
	THANE UNDERDAHL	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *2,5,8 and 12-15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 4, 6, 7, 9-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/28/07 and 2/17/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the Applicant's reply received 11/20/07. Claims 1-15 are pending. Claims 2, 5, 8, 12-15 are withdrawn. No claims are cancelled. No claims have been amended. No claims are new.

Response to Restriction/Election

Applicant's response to the species election without traverse filed on 7/26/2006 is acknowledged. The applicant elected Group I which includes claims 1, 3, 4, 6, 7 and 9-11. Claims 2, 5, 8, 12-15 are withdrawn since they are to non-elected subject matter. The Examiner recognizes the made a typo in the previous restriction that added the numbers 23-30 to the claim. Apologies for any confusion.

Claim Rejections - 35 USC § 112

Claims 4, 7, 9 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims contain the limitation "having a constant phosphorylation activity". The Applicant defines this term as "the ability to constantly exhibit phosphorylation activity under an ordinary biochemical condition in which the three-dimensional structure of the protein is preserved" (Applicant's specification, paragraph 31). Applicant further states a "Protein having such an ability is different from those whose phosphorylation activity switches on and off depending on an external factor". However this definition is indefinite because it includes in-vivo situations, where in the cell, no external factor may be added but could be produced or inherent in the cell that activates the **PKC (protein kinase C)** activity. In this situation the cell itself produced the factor to induce phosphorylation and no external factor was added. This situation can easily be expanded into ex-vivo situations such as cell culture

experiments. Also it does not clearly define if all PKC theta (**PKC Θ**) enzymes have this property or a select few. Clarification is required.

Claim 9 has the limitation of "PKNA1". This claim is not listed in the specification. In the interest of compact prosecution, the Examiner will interpret this is a simply typo for "KPNA1".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 4, 6, 7, 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maiyar et al. (MBC in Press, 2002) with in light of support by Perander et al. (JBC, 2001), Springer Handbook of Enzymes (2007) and Rosen et al. (Pharmacological Research, 2007).

The Applicant will note that several of the supporting references were published after the priority date of the application. In certain circumstances, references cited to show a universal fact need not be available as prior art before applicant's filing date. *In re Wilson*, 311 F.2d 266, 135 USPQ 442 (CCPA 1962). Such facts include the characteristics and properties of a material or a scientific truism. Some specific examples in which later publications showing factual evidence can be cited include situations where the facts shown in the reference are evidence "that, as of an

application 's filing date, undue experimentation would have been required, *In re Corneil*, 347 F.2d 563, 568, 145 USPQ 702, 705 (CCPA 1965), or that a parameter absent from the claims was or was not critical, *In re Rainer*, 305 F.2d 505, 507 n.3, 134 USPQ 343, 345 n.3 (CCPA 1962), or that a statement in the specification was inaccurate, *In re Marzocchi*, 439 F.2d 220, 223 n.4, 169 USPQ 367, 370 n.4 (CCPA 1971), or that the invention was inoperative or lacked utility, *In re Langer*, 503 F.2d 1380, 1391, 183 USPQ 288, 297 (CCPA 1974), or that a claim was indefinite, *In re Glass*, 492 F.2d 1228, 1232 n.6, 181 USPQ 31, 34 n.6 (CCPA 1974), or that characteristics of prior art products were known, *In re Wilson*, 311 F.2d 266, 135 USPQ 442 (CCPA 1962)." *In re Koller*, 613 F.2d 819, 823 n.5, 204 USPQ 702, 706 n.5 (CCPA 1980) (quoting *In re Hogan*, 559 F.2d 595, 605 n.17, 194 USPQ 527, 537 n.17 (CCPA 1977) (emphasis in original)). However, it is impermissible to use a later factual reference to determine whether the application is enabled or described as required under 35 U.S.C. 112, first paragraph. *In re Koller*, 613 F.2d 819, 823 n. 5, 204 USPQ 702, 706 n.5 (CCPA 1980). References which do not qualify as prior art because they postdate the claimed invention may be relied upon to show the level of ordinary skill in the art at or around the time the invention was made. *Ex parte Erlich*, 22 USPQ 1463 (Bd. Pat. App. & Inter. 1992). See M.P.E.P. § 2124.

These claims are drawn to an inhibitor of the protein-protein interaction between PKC Θ and KPNA1 (**Karyopherin alpha 1 or Importin alpha**). Claim 3 is to an inhibitor with the same limitations as claim 1 but is obtained by a specific process. M.P.E.P. § 2113 state "Product by process claims are not limited to the

manipulations of the recited steps, only the structure implied by the steps". Therefore the product being examined in the claims includes and inhibitor for the interaction between PKC Θ and KPNA1 and not the steps used to obtain this composition.

Claims 6 and 7 are also drawn to a method of detecting an inhibitor of the interaction between PKC Θ and KPNA1. This method examines the interaction between the two proteins in the presence of the prospective inhibitor to observe the presence of inhibition.

Claims 9-11 are to a kit for detecting an inhibitor of the interaction between PKC Θ and KPNA1. This kit comprises vectors containing the polynucleotide sequence for PKC Θ and KPNA1.

Maiyar et al. teach a carboxy terminal fragment of KPNA1 (**tfKPNA1**) that inhibits the binding to protein kinase Sgk (**Sgk**) and its interaction with full length KPNA1 (Maiyar, page 26, 2nd paragraph). KPNA1 is also known as importin-α. KPNA1 binds to Sgk via a nuclear localization signal (**NLS**), which is the site that is competitively bound by the KPNA1 fragment (Maiyar, page 2, Abstract). Sgk is a synonym for PKC Θ as supported by the Springer Handbook of Enzymes (see page 445 and page 443). These NLSs for KPNA1 are conserved for protein kinases as supported by Perander et al. (page 13015, col 2, last paragraph). Furthermore NLSs are present in all PKC isozymes as supported by Rosen et al. (pg 472, col 2, last paragraph). In short summary Sgk has an NLS that is bound by tfKPNA1 inhibiting the binding of the full length KPNA1. Sgk is a synonym for PKC Θ. Isozymes of PKC have

NLSs that are conserved. Therefore it would have been obvious to someone skilled in the art that if tfKPNA1 binds to the NLS of Sgk it will also bind to the NLS cite of PKC Θ since these proteins are synonymous and the NLS cites are conserved.

Maiyar et al. teach a method of selecting this inhibitor by placing tfKPNA1 in a solution with Sgk and full length KPNA1 and observing the amount of inhibition provided via a yeast hybrid screen (Maiyar, page 26, last paragraph).

The materials and methods section of Maiyar et al. teach that KPNA1, tfKPNA1, and Sgk were made by recombinant vectors using molecular biological techniques known to one of ordinary skill in the art (Maiyar, MATERIALS AND METHODS, pg 7-9).

While Maiyar et al. does not teach that the vectors are combined into a kit, this would have been obvious to someone skilled in the art since the vectors are packaged individually but could be combined into a single package assay to perform the Yeast Two Hybrid Screen to test for inhibitive binding between KPNA1 and Sgk. The combination of known reagents for a single test or assay is well known in the art and the biotech field and the literature from company catalogs to patents are full of instances where individual reagents were grouped together in a convenient package for the purpose of performing an assay. One of ordinary skill in the art would recognize this ubiquitous collecting of regents for a common assays in the art and done the same for their Yeast Two Hybrid Screen for both purposes of commercial success and convenience (KSR International Co. v. Teleflex Inc., 550 U.S.--, 82 USPQ2d 1385 (2007)).

Therefore the references listed above renders obvious claims 1, 3, 4, 6, 7, 9-11.

In summary no claims, as written, are allowed for this application.

In response to this office action the applicant should specifically point out the support for any amendments made to the disclosure, including the claims (MPEP 714.02 and 2163.06). Due to the procedure outlined in MPEP § 2163.06 for interpreting claims, it is noted that other art may be applicable under 35 U.S.C. § 102 or 35 U.S.C. § 103(a) once the aforementioned issue(s) is/are addressed.

Applicant is requested to provide a list of all copending U.S. applications that set forth similar subject matter to the present claims. A copy of such copending claims is requested in response to this Office action.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thane Underdahl whose telephone number is (571) 272-9042. The examiner can normally be reached Monday through Thursday, 8:00 to 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached at (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon B Lankford Jr/
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